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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/483,737	01/14/2000	Hansjorg Reichert	GR-97-P-1903	8769

24131 7590 03/27/2006

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ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 03/27/2006

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/483,737
Filing Date: January 14, 2000
Appellant(s): REICHERT ET AL.

Laurence A. Greenberg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/9/2005 appealing from the Office action mailed 9/9/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

WO 88/03705	Fister et al	5-1988
5,234,153	Bacon e tal	8-1993

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii (JP 6-326210) (of record) in view of Fister et al. ("Fister") WO 88/03705 and Bacon et al. ("Bacon") USPN 5,234,153.

Ishii discloses in fig. 2 a semiconductor component comprising a solder containing at least two components with at least two constituents including a first constituent containing a precious metal and a second constituent being consumed during a soldering operation by one of reacting and being dissolved in material which are to be joined; a substrate 40; a chip 1 having a rear side and a diffusion barrier 7a; said semiconductor chip being secured at said rear side to a substrate 40 by a solder containing gold and tin solder 8 and said solder having a hypereutectic concentration containing gold-tin (AuSn) with a hypereutectic Sn concentration and containing a gold-tin compound (AuSn) having a composition which falls within the range recited in the claim; and said a semiconductor chip being secured to said substrate by one of alloying and

brazing using said solder but lacks anticipation of an adhesive or diffusion barrier provided on said rear side of semiconductor chip or solder thickness.

Fister discloses in figs. 1-5 a semiconductor component comprising a solder 18 containing at least two components with at least two constituents including a first constituent containing a precious metal and a second constituent; a substrate 14; and a semiconductor chip 12 having a rear side and adhesive 19 provided on said rear side; and said semiconductor chip being secured at said rear side to said substrate by one of alloying and brazing using said solder to form chip-substrate connection by said solder.

Bacon teaches (see col. 1 lines 50-63 and claim 7) the advantage of using a thin gold-tin compound solder.

Since Ishii, Fister and Bacon are all from the same field of endeavor, semiconductor die attach system, the teachings of Fister and Bacon would have been recognized in Ishii's pertinent art. Therefore, in view of Fister's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Ishii's device by incorporating an adhesive on a rear side of a semiconductor chip since that would dissipate thermal cycling stresses as taught by Fister. It would have been obvious to incorporate a thin solder, since that would provide a better thermal conductance as taught by Bacon.

(10) Response to Argument

The appellants argue that the combined references listed above do not disclose all of the elements of the device structure as recited in the claim. Specifically, The appellants argue that the cited references disclose neither an adhesive provided on a rear side of a semiconductor chip nor forming a chip-substrate connection by a solder.

The examiner respectfully disagrees with the appellants because:

Ishii discloses the device structure as recited in the claim. What Ishii lacks, an adhesive provided on a rear side of a semiconductor chip and forming a chip-substrate connection by a solder, is taught by Fister which discloses an adhesive 19 provided on a rear side of a semiconductor chip 12 and forming a chip-substrate connection by a solder 18 -- Note that the claim language does not exclude a buffer layer between an adhesive/diffusion barrier and a solder. Furthermore, Bacon teaches the advantages of a thin -- less than 4μm -- gold-tin solder.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

ANS ANS
by JVS

February 28, 2006

[illegible]
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Conferees:

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